''(iv) the appropriate roles and responsibilities of the Chief Information Officer of the Department of Defense, the Under Secretary of Defense for Acquisition and Sustainment, the heads of the combatant commands, the Secretaries concerned, the Defense Advanced Research Projects Agency, and the defense industrial base in using and maintaining a covered technology to generate diverse and recomposable kill chains as part of the Joint All-Domain Command and Control architecture;

''(v) for at least one of the demonstrations conducted under clause (i), demonstration of the use of technology developed under the High-Assurance Cyber Military Systems program of the Defense Advanced Research Projects Agency to secure legacy weapon systems and command and control capabilities while facilitating interoperability;

''(vi) an evaluation of how the technology referred to in clause (v) and covered technology should be used to improve cybersecurity and interoperability across critical weapon systems and command and control capabilities across the joint forces; and

''(vii) coordination with the program manager for the Time Sensitive Targeting Defeat program under the Under Secretary of Defense for Research and Engineering and the Under Secretary of Defense for Intelligence and Security.

''(2) CHIEF INFORMATION OFFICER ASSESSMENT.—

''(A) IN GENERAL.—The Chief Information Officer for the Department of Defense, in coordination with the Principal Cyber Advisor to the Secretary of Defense and the Director of the Cybersecurity Directorate of the National Security Agency, shall assess the technologies developed under the System of Systems Integration Technology and Experimentation program of the Defense Advanced Research Projects Agency, including the covered technology, and applicability of such technology to the business systems and cybersecurity tools of the Department.

''(B) COVERAGE.—The assessment required under subparagraph (A) shall include—

''(i) an evaluation as to how the technologies referred to in such subparagraph could be used in conjunction with or instead of existing cybersecurity standards, frameworks, and technologies designed to enable communication between, and coordination of, cybersecurity tools;

''(ii) as appropriate, demonstrations by the Chief Information Office of the use of such technologies in enabling communication between, and coordination of, previously incompatible cybersecurity tools; and

''(iii) as appropriate, demonstrations of the use of such technologies in enabling communication between previously incompatible business systems.

''(3) SUSTAINMENT OF CERTAIN ENGINEERING RESOURCES AND CAPABILITIES.—During the period the demonstrations and assessments required under this subsection are conducted, and thereafter to the extent required to execute the activities directed by the Joint All-Domain Command and Control cross-functional team, the Joint All-Domain Command and Control cross-functional team shall sustain the System of Systems Technology Integration Tool Chain for Heterogeneous Electronic Systems engineering resources and capabilities developed by the Defense Advanced Research Projects Agency.

''(4) TRANSFER OF RESPONSIBILITY.—Not earlier than 1 year before, and not later than 2 years after the date of the enactment of this Act, the Secretary of Defense may transfer responsibility for maintaining the engineering resources and capabilities described in paragraph (3) to a different organization within the Department.

''(e) OPEN STANDARDS.—Nothing in this section shall be construed as requiring, preventing, or interfering with the use or application of any given communication standard or interface. The communication described in subsection (a)(2)(A) may be accomplished by using existing open standards, by the creation and use of new open standards, or through other approaches, provided that such standards meet the requirements of subsection (a)(2)(B).

''(f) DEFINITIONS.—In this section:

''(1) The term 'covered technology' means the domain-specific programming language for interface field transformations and its associated compilation toolchain (commonly known as the 'System of Systems Technology Integration ToolChain for Heterogeneous Electronic Systems') developed under the Defense Advanced Research Projects Agency System of Systems Integration Technology and Experimentation program, or any other technology that is functionally equivalent.

''(2) The term 'desired modularity' means the desired degree to which weapon systems, components within a weapon system, and components across weapon systems can function as modules that can communicate across component boundaries and through interfaces and can be separated and recombined to achieve various effects, missions, or capabilities, as determined by the program officer for such weapon system.

''(3) The term 'machine-readable format' means a format that can be easily processed by a computer without human intervention.

''(4) The terms 'major system', 'major system component', 'modular open system approach', 'modular system', 'modular system interface', and 'weapon system' have the meanings given such terms, respectively, in section 2446a of title 10, United States Code [now 10 U.S.C. 4401].''

§ 4402. Requirement to address modular open system approach in program capabilities development and acquisition weapon system design

(a) PROGRAM CAPABILITY DOCUMENT.—A program capability document for a major defense acquisition program shall identify and characterize—

(1) the extent to which requirements for system performance are likely to evolve during the life cycle of the system because of evolving technology, threat, or interoperability needs; and

(2) for requirements that are expected to evolve, the minimum acceptable capability that is necessary for initial operating capability of the major defense acquisition program.

(b) ANALYSIS OF ALTERNATIVES.—The Director of Cost Assessment and Performance Evaluation, in formulating study guidance for analyses of alternatives for major defense acquisition programs and performing such analyses under section 139a(d)(4) of this title, shall ensure that any such analysis for a major defense acquisition program includes consideration of evolutionary acquisition, prototyping, and a modular open system approach.

(c) ACQUISITION STRATEGY.—In the case of a major defense acquisition program that uses a modular open system approach, the acquisition strategy required under section 4211 of this title shall—

(1) clearly describe the modular open system approach to be used for the program;

(2) differentiate between the major system platform and major system components being developed under the program, as well as major

system components developed outside the program that will be integrated into the major defense acquisition program;

(3) clearly describe the evolution of major system components that are anticipated to be added, removed, or replaced in subsequent increments;

(4) identify additional major system components that may be added later in the life cycle of the major system platform;

(5) clearly describe how intellectual property and related issues, such as technical data deliverables, that are necessary to support a modular open system approach, will be addressed; and

(6) clearly describe the approach to systems integration and systems-level configuration management to ensure mission and information assurance.

(d) REQUEST FOR PROPOSALS.—The milestone decision authority for a major defense acquisition program that uses a modular open system approach shall ensure that a request for proposals for the development or production phases of the program shall describe the modular open system approach and the minimum set of major system components that must be included in the design of the major defense acquisition program.

(e) MILESTONE B.—A major defense acquisition program may not receive Milestone B approval under section 4252 of this title until the milestone decision authority determines in writing—

(1) in the case of a program that uses a modular open system approach, that—

(A) the program incorporates clearly defined major system interfaces between the major system platform and major system components, between major system components, and between major system platforms;

(B) such major system interfaces are consistent with the widely supported and consensus-based standards that exist at the time of the milestone decision, unless such standards are unavailable or unsuitable for particular major system interfaces; and

(C) the Government has arranged to obtain appropriate and necessary intellectual property rights with respect to such major system interfaces upon completion of the development of the major system platform; or

(2) in the case of a program that does not use a modular open system approach, that the use of a modular open system approach is not practicable.

(f) IMPLEMENTATION GUIDANCE.—The Secretaries of the military departments shall issue guidance to implement the requirements of this section.

(Added Pub. L. 114–328, div. A, title VIII, §805(a)(1), Dec. 23, 2016, 130 Stat. 2253, §2446b; amended Pub. L. 115–91, div. A, title X, §1081(a)(40), Dec. 12, 2017, 131 Stat. 1596; Pub. L. 116–92, div. A, title VIII, §840(a), Dec. 20, 2019, 133 Stat. 1499; renumbered §4402 and amended Pub. L. 116–283, div. A, title XVIII, §1851(b)(1), (3), Jan. 1, 2021, 134 Stat. 4272.)

Editorial Notes

AMENDMENTS

2021—Pub. L. 116–283, §1851(b)(1), renumbered section 2446b of this title as this section.

Subsec. (c). Pub. L. 116–283, §1851(b)(3)(A), substituted ''section 4211'' for ''section 2431a'' in introductory provisions.

Subsec. (e). Pub. L. 116–283, §1851(b)(3)(B), substituted ''section 4252'' for ''section 2366b'' in introductory provisions.

2019—Subsec. (f). Pub. L. 116–92 added subsec. (f).

2017—Subsec. (e). Pub. L. 115–91 substituted ''in writing—'' for ''in writing that—'' in introductory provisions and inserted '', that'' after ''open system approach'' in introductory provisions of par. (1).

Statutory Notes and Related Subsidiaries

EFFECTIVE DATE OF 2021 AMENDMENT

Amendment by Pub. L. 116–283 effective Jan. 1, 2022, with additional provisions for delayed implementation and applicability of existing law, see section 1801(d) of Pub. L. 116–283, set out as a note preceding section 3001 of this title.

EFFECTIVE DATE

Section effective Jan. 1, 2017, see section 805(a)(4) of Pub. L. 114–328, set out as a note under section 4401 of this title.

§4403. Requirements relating to availability of major system interfaces and support for modular open system approach

The Secretary of each military department shall—

(1) coordinate with the other military departments, the defense agencies, defense and other private sector entities, national standards-setting organizations, and, when appropriate, with elements of the intelligence community with respect to the specification, identification, development, and maintenance of major system interfaces and standards for use in major system platforms, where practicable;

(2) ensure that major system interfaces incorporate commercial standards and other widely supported consensus-based standards that are validated, published, and maintained by recognized standards organizations to the maximum extent practicable;

(3) ensure that sufficient systems engineering and development expertise and resources are available to support the use of a modular open system approach in requirements development and acquisition program planning;

(4) ensure that necessary planning, programming, and budgeting resources are provided to specify, identify, develop, and sustain the modular open system approach, associated major system interfaces, systems integration, and any additional program activities necessary to sustain innovation and interoperability;

(5) ensure that adequate training in the use of a modular open system approach is provided to members of the requirements and acquisition workforce; and

(6) issue guidance to implement the requirements of this section.

(Added Pub. L. 114–328, div. A, title VIII, §805(a)(1), Dec. 23, 2016, 130 Stat. 2255, §2446c; amended Pub. L. 116–92, div. A, title VIII,

§ 840(b), Dec. 20, 2019, 133 Stat. 1499; renumbered § 4403, Pub. L. 116–283, div. A, title XVIII, § 1851(b)(1), Jan. 1, 2021, 134 Stat. 4272.)

Editorial Notes

PRIOR PROVISIONS

Prior sections 4411 to 4414 were renumbered sections 7481 to 7484 of this title, respectively.

A prior section 4415, added Pub. L. 100–180, div. A, title III, § 319(a)(1), Dec. 4, 1987, 101 Stat. 1077; amended Pub. L. 100–526, title I, § 106(c), Oct. 24, 1988, 102 Stat. 2625, related to United States Army School of the Americas, prior to repeal by Pub. L. 106–398, § 1 [[div. A], title IX, § 911(b)], Oct. 30, 2000, 114 Stat. 1654, 1654A-228.

Prior sections 4416 and 4417 were renumbered sections 7486 and 7487 of this title, respectively.

AMENDMENTS

2021—Pub. L. 116–283 renumbered section 2446c of this title as this section.

2019—Par. (6). Pub. L. 116–92 added par. (6).

Statutory Notes and Related Subsidiaries

EFFECTIVE DATE OF 2021 AMENDMENT

Amendment by Pub. L. 116–283 effective Jan. 1, 2022, with additional provisions for delayed implementation and applicability of existing law, see section 1801(d) of Pub. L. 116–283, set out as a note preceding section 3001 of this title.

EFFECTIVE DATE

Section effective Jan. 1, 2017, see section 805(a)(4) of Pub. L. 114–328, set out as a note under section 4401 of this title.

SUBCHAPTER II—DEVELOPMENT, PROTOTYPING, AND DEPLOYMENT OF WEAPON SYSTEM COMPONENTS OR TECHNOLOGY

§ 4421. Weapon system component or technology prototype projects: display of budget information

(a) REQUIREMENTS FOR BUDGET DISPLAY.—In the defense budget materials for any fiscal year, the Secretary of Defense shall, with respect to advanced component development and prototype activities (within the research, development, test, and evaluation budget), set forth the amounts requested for each of the following:

(1) Acquisition programs of record.

(2) Development, prototyping, and experimentation of weapon system components or other technologies, including those based on commercial products and technologies, separate from acquisition programs of record.

(3) Other budget line items as determined by the Secretary of Defense.

(b) ADDITIONAL REQUIREMENTS.—For purposes of subsection (a)(2), the amounts requested for development, prototyping, and experimentation of weapon system components or other technologies shall be—

(1) structured into either capability, weapon system component, or technology portfolios that reflect the priority areas for prototype projects; and

(2) justified with general descriptions of the types of capability areas and technologies being funded or expected to be funded during the fiscal year concerned.

(c) DEFINITIONS.—In this section, the terms ''budget'' and ''defense budget materials'' have the meaning given those terms in section 234 of this title and the term ''commercial product'' has the meaning given that term in section 103 of title 41.

(Added Pub. L. 114–328, div. A, title VIII, § 806(a)(1), Dec. 23, 2016, 130 Stat. 2256, § 2447a; amended Pub. L. 115–232, div. A, title VIII, § 836(e)(8), Aug. 13, 2018, 132 Stat. 1870; Pub. L. 116–92, div. A, title XVII, § 1731(a)(51), Dec. 20, 2019, 133 Stat. 1815; renumbered § 4421, Pub. L. 116–283, div. A, title XVIII, § 1851(c)(1), Jan. 1, 2021, 134 Stat. 4272.)

Editorial Notes

AMENDMENTS

2021—Pub. L. 116–283 renumbered section 2447a of this title as this section.

2019—Subsec. (a). Pub. L. 116–92 struck out ''after fiscal year 2017'' after ''any fiscal year'' in introductory provisions.

2018—Subsec. (a)(2). Pub. L. 115–232, § 836(e)(8)(A), substituted ''commercial products and technologies'' for ''commercial items and technologies''.

Subsec. (c). Pub. L. 115–232, § 836(e)(8)(B), inserted before period at end ''and the term 'commercial product' has the meaning given that term in section 103 of title 41''.

Statutory Notes and Related Subsidiaries

EFFECTIVE DATE OF 2021 AMENDMENT

Amendment by Pub. L. 116–283 effective Jan. 1, 2022, with additional provisions for delayed implementation and applicability of existing law, see section 1801(d) of Pub. L. 116–283, set out as a note preceding section 3001 of this title.

EFFECTIVE DATE OF 2018 AMENDMENT

Amendment by Pub. L. 115–232 effective Jan. 1, 2020, subject to a savings provision, see section 836(h) of Pub. L. 115–232, set out as an Effective Date of 2018 Amendment; Savings Provision note under section 453b of Title 6, Domestic Security.

EFFECTIVE DATE

Pub. L. 114–328, div. A, title VIII, § 806(a)(2), Dec. 23, 2016, 130 Stat. 2259, provided that: ''Subchapter II of chapter 144B of title 10, United States Code [see, now, this subchapter], as added by paragraph (1), shall take effect on January 1, 2017.''

§ 4422. Weapon system component or technology prototype projects: oversight

(a) ESTABLISHMENT.—The Secretary of each military department shall establish an oversight board or identify a similar existing group of senior advisors for managing prototype projects for weapon system components and other technologies and subsystems, including the use of

funds for such projects, within the military department concerned.

(b) MEMBERSHIP.—Each oversight board shall be comprised of senior officials with—

(1) expertise in requirements; research, development, test, and evaluation; acquisition; sustainment; or other relevant areas within the military department concerned;

(2) awareness of technology development activities and opportunities in the Department of Defense, industry, and other sources; and

(3) awareness of the component capability requirements of major weapon systems, including scheduling and fielding goals for such component capabilities.

(c) FUNCTIONS.—The functions of each oversight board are as follows:

(1) To issue a strategic plan every three years that prioritizes the capability and weapon system component portfolio areas for conducting prototype projects, based on assessments of—

(A) high priority warfighter needs;

(B) capability gaps or readiness issues with major weapon systems;

(C) opportunities to incrementally integrate new components into major weapon systems based on commercial technology or science and technology efforts that are expected to be sufficiently mature to prototype within three years; and

(D) opportunities to reduce operation and support costs of major weapon systems.

(2) To annually recommend funding levels for weapon system component or technology development and prototype projects across capability or weapon system component portfolios.

(3) To annually recommend to the service acquisition executive of the military department concerned specific weapon system component or technology development and prototype projects, subject to the requirements and limitations in section 4423 of this title.

(4) To ensure projects are managed by experts within the Department of Defense who are knowledgeable in research, development, test, and evaluation and who are aware of opportunities for incremental deployment of component capabilities and other technologies to major weapon systems or directly to support warfighting capabilities.

(5) To ensure projects are conducted in a manner that allows for appropriate experimentation and technology risk.

(6) To ensure projects have a plan for technology transition of the prototype into a fielded system, program of record, or operational use, as appropriate, upon successful achievement of technical and project goals.

(7) To ensure necessary technical, contracting, and financial management resources are available to support each project.

(8) To submit to the congressional defense committees a semiannual notification that includes the following:

(A) each weapon system component or technology prototype project initiated during the preceding six months, including an explanation of each project and its required funding.

(B) the results achieved from weapon system component prototype and technology projects completed and tested during the preceding six months.

(Added Pub. L. 114–328, div. A, title VIII, §806(a)(1), Dec. 23, 2016, 130 Stat. 2257, §2447b; renumbered §4422 and amended Pub. L. 116–283, div. A, title XVIII, §1851(c)(1), (2), Jan. 1, 2021, 134 Stat. 4272.)

Editorial Notes

AMENDMENTS

2021—Pub. L. 116–283, §1851(c)(1), renumbered section 2447b of this title as this section.

Subsec. (c)(3). Pub. L. 116–283, §1851(c)(2), substituted ''section 4423'' for ''section 2447c''.

Statutory Notes and Related Subsidiaries

EFFECTIVE DATE OF 2021 AMENDMENT

Amendment by Pub. L. 116–283 effective Jan. 1, 2022, with additional provisions for delayed implementation and applicability of existing law, see section 1801(d) of Pub. L. 116–283, set out as a note preceding section 3001 of this title.

EFFECTIVE DATE

Section effective Jan. 1, 2017, see section 806(a)(2) of Pub. L. 114–328, set out as a note under section 4421 of this title.

§4423. Requirements and limitations for weapon system component or technology prototype projects

(a) LIMITATION ON PROTOTYPE PROJECT DURATION.—A prototype project shall be completed within two years of its initiation.

(b) MERIT-BASED SELECTION PROCESS.—A prototype project shall be selected by the service acquisition executive of the military department concerned through a merit-based selection process that identifies the most promising, innovative, and cost-effective prototypes that address one or more of the elements set forth in subsection (c)(1) of section 4422 of this title and are expected to be successfully demonstrated in a relevant environment.

(c) TYPE OF TRANSACTION.—Prototype projects shall be funded through contracts, cooperative agreements, or other transactions.

(d) FUNDING LIMIT.—(1) Each prototype project may not exceed a total amount of $10,000,000 (based on fiscal year 2017 constant dollars), unless—

(A) the Secretary of the military department, or the Secretary's designee, approves a larger amount of funding for the project, not to exceed $50,000,000; and

(B) the Secretary, or the Secretary's designee, submits to the congressional defense committees, within 30 days after approval of such funding for the project, a notification that includes—

(i) the project;

(ii) expected funding for the project; and

(iii) a statement of the anticipated outcome of the project.

(2) The Secretary of Defense may adjust the amounts (and the base fiscal year) provided in paragraph (1) on the basis of Department of Defense escalation rates.